

INFORMATION ITEM

Lessons on Drought: Synthesis Report on the Science and Management Actions in Response to Drought Relevant to the Sacramento-San Joaquin Delta Region

Summary: This presentation will provide the Council with an overview of the report, *Drought and the Sacramento-San Joaquin Delta, 2012-2016: Synthesis Review and Lessons*. This was a synthesis effort supported by the Council through the Delta Science Program. The report will be a guiding document that provides both managers and scientists with lessons learned from the past drought and offers insights for future management and planning. The product also fulfills the High-Impact Science Actions (HISA) Topic 1A, endorsed by the Delta Plan Interagency Implementation Committee.

Background

The 2012-2016 drought in California was one of the most severe in the state's recorded history. Several actions were taken by State agencies that were unparalleled in other drought years. The report, *Drought and the Sacramento-San Joaquin Delta, 2012-2016: Synthesis Review and Lessons* (Attachment 1), evaluates the outcomes of management actions taken in response to drought on the water supply, ecosystem, and economy in the Delta region and provides recommendations for future management and science actions to better prepare and respond to drought. This synthesis effort was supported by the Council in coordination with the University of California Davis Center for Watershed Sciences (UC Davis) and fulfills Topic 1A of the 2015 High Impact Science Actions (HISA)

http://deltacouncil.ca.gov/sites/default/files/2017/04/Agenda%20Item%204_Attachment%204.1_Progress%20Report%20HISA.pdf, that were endorsed by the Delta Plan Interagency Implementation Committee.

The report reviews management decisions and actions taken between 2012 and 2016 in response to drought conditions and highlights the science used to inform those decisions and determine the effects of the actions taken. The management actions covered in the report include temperature control on the upper Sacramento River, which affected species that migrate through the Delta; temporary modifications to water quality standards within and flowing out of the Delta; and changes to agricultural and urban water consumption.

The report findings include evidence that state and federal actions to manage the Delta ecosystem during the drought were unable to avoid effects on native species. These included drastic declines in the winter-run Chinook salmon populations due to challenges controlling Sacramento River temperatures below Keswick Dam and reductions in Delta Smelt populations due to reduction in outflow, decline in habitat, and other stressors. A lack of funding hindered many agencies in their ability to capitalize on the opportunity to assess the effects of drought and provide critical information in real time. Although in-Delta agricultural users adapted to drought through voluntary reductions in water diversions, fallowing land, and experimenting with different crop

types, the overall management effects on Delta crop yield and soil salinity is still not well understood. The report recommends development of a Delta drought plan that establishes drought governance, advance planning of science activities for monitoring and evaluating effects, and a mechanism for interagency communication.

This presentation by UC Davis follows up on a panel presentation provided to the Council at the October 2017 meeting <http://deltacouncil.ca.gov/docs/delta-stewardship-council-october-262017-meeting-agenda-item-11-presentation-cal-oes-after>. During this meeting, the authors of three drought-related reports (CWS, Delta Watermaster, and the Office of Emergency Services) summarized their respective report contents. At the March 2018 meeting, presenters will provide a more complete synopsis of the report, including an overview of major findings and recommendations.

The executive summary of the report will be available publically on the Delta Stewardship Council website, while the final manuscript will be submitted to a scientific journal at the end of March for potential publication in fall 2018.

Relevance to Council and Delta Plan

The 2012-2016 drought affected all aspects of the coequal goals: water supply reliability, the Delta ecosystem, and socio-economic and cultural aspects of the Delta. The drought synthesis report covers aspects of the Delta in varying detail with the ultimate goal of informing ways to improve current ecosystem and water resource management practices that affect the Delta and the state. One of the core strategies identified in Chapter 3 of the Delta Plan is to “improve water management information” in the Delta. The report highlighted during this briefing involves discussions and insights on various water management actions taken during the drought with the goal of increasing transparency of agency actions. The final report supports and recommends future research on science information needs already identified in Delta Plan Chapters 3 and 4, including: improved water supply and demand forecasting models that incorporate vulnerability to extreme events and account for the impacts of climate change; and knowledge on the effects of changing habitat quality and quantity on Delta fish and invertebrates.

Fiscal Information

Not applicable.

List of Attachments

Attachment 1: Executive Summary of *Drought and the Sacramento-San Joaquin Delta, 2012-2016: Synthesis Review and Lessons*

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